

1 **BOAT CAPTURE SYSTEM**

2
3 **Background**

4 The ensuing description relates generally to boat docking systems. In a prior art system,
5 it is known to employ a rigid "U" shaped attachment to a boat trailer in conjunction with a small
6 latch on the forward portion of the "V" shaped bow of a boat. This system works to lock the boat
7 on the trailer but lacks the capability of catching and arresting a boat that undergoes a large,
8 constantly changing, vertical height component caused by surging seas. The rigid, bent metal
9 tube, construction of the trailer attachment lacks a method of absorbing the high amounts of
10 kinetic energy needed to quickly capture and arrest a heavy marine vessel coming into a trailer
11 from the open sea. In such circumstances, destruction of the prior art system is likely as well as
12 damage to the boat and harm to its occupants.

13 **Summary**

14 A system of docking a small boat (a marine vessel) allows the boat to be driven onto a
15 trailer platform under substantial power and in many sea conditions. The trailer is equipped with
16 one or more pairs of goalposts that interface with the gunwales of the boat to assist in positioning
17 the boat upon the platform. To absorb the kinetic energy of the moving vessel, an expandible
18 and retractable harness is attached to either side of the trailer platform so that a length of the

Navy Case No. 79950

1 harness crosses the path of the vessel. Elastic cords positioned the harness at a height that
2 interfaces with the V-shaped bow of the vessel as it is being docked. A latch, attached to the bow
3 of the vessel, snags the harness as it lies across the path of the docking boat. The latch has a
4 spring-biased and weighted cam that first moves to an open position upon the harness contacting
5 the cam. The latch rotates to a closed position once the harness passes the cam. The harness
6 then enters into a hook formed by the latch and the closed position of the cam retains the harness
7 in the hook. The expandable and retractable harness dissipates the kinetic energy of the vessel as
8 it is being docked and assists in bringing the vessel to a rest. This technique of docking has use
9 in calm as well as extremely rough seas.

10 Other objects, advantages and new features will become apparent from the following
11 detailed description when considered in conjunction with the accompanied drawings.

Brief Description of the Drawings

13 FIG. 1 illustrates a representative docking system according to the description herein.

14 FIG. 2 depicts a marine vessel utilizing the docking system described herein.

15 FIG. 3 shows a close-up view of a latch as may be used in the docking system described
16 further herein.

17 FIG. 4A shows the latch of FIG. 3 in an open position.

18 FIG. 4B is another view of the latch of FIG. 3 in which the latch is shown in a closed
19 position.

Description

21 Referring to FIG.1, a representative marine vessel docking system 10 is shown. Docking

Navy Case No. 79950

1 system 10 can be used in tranquil as well as high sea states, such as sea states of 2 and 3. In
2 either calm or rough sea state usage, an operator of a marine vessel can choose to approach
3 docking system 10 under considerable power. By using such power in high sea conditions, the
4 vessel's captain has greater steering and maneuverability control in docking the boat, thereby
5 assisting the captain in overcoming the tumultuous ocean and wind forces that can tear at the
6 boat and make docking difficult and dangerous to both the vessel and its operator. While the
7 docking system has use at land-based boat launching facilities, it can also be used onboard
8 "tailgate" vessels such as on the roll-on, roll-off sterngate of a landing craft utility (LCU) vessel
9 wherein the tailgate is lowered at-sea.

10 Referring once again to FIG. 1, it can be seen that system 10 can use a commercially
11 available trailer platform 12 modified according to the further description provided herein.
12 Though platform 12 is shown equipped with wheels 14, one can envision scenarios where such
13 wheels are removed, for example, the use of the platform on certain floating docks and the like,
14 on which the trailer platform is rigidly fixed.

15 As with traditional trailer design, platform 12 is equipped with support surfaces, such as
16 skids 16, that are designed to contact the vessel hull to bear the weight of a marine vessel that is
17 docking and that is docked upon the trailer. Of course, rollers are also possible for such purposes
18 and even a combination of rollers and skids can be used.

19 In accordance with the docking system described herein, oppositely disposed "goalposts"
20 18 are attached to the frame of the trailer platform. These flexible goalposts are placed on
21 opposite sides of the platform and are designed to interface with the gunwales of a boat to assist

Navy Case No. 79950

1 in positioning the boat upon the trailer platform during the docking of the boat. As can be seen,
2 the goalposts may be positioned to contact the forward, midship and aft locations of the gunwales
3 once the boat is fully docked. These goalposts may be covered with poly-vinyl-chloride (PVC)
4 tubing.

5 In further accordance with the description herein, an elastic U-shaped harness 20 is
6 attached on opposite sides of platform 12 so that the harness crosses the path of a marine vessel
7 as it is being docked upon platform 12. More specifically, a length 22 is suspended at a height
8 designed to interface with a V-shaped bow of a vessel being docked. In this embodiment,
9 harness 20 is hoisted by elastic cords 24, for example bungee cords, that are slung between the
10 forward goalposts 18 and the harness. To enhance a U-shaping of the harness, the harness can be
11 threaded through two sections of stiff hose 26 that are placed oppositely on the harness. These
12 sections of stiff hose serve to shape the harness as well as assist in propelling the harness
13 downwardly upon contact with a docking vessel.

14 Referring now to FIG 2, a marine vessel 28 is shown in a docked position on trailer
15 platform 12. Marine vessel 28 can be any of a variety of V-shaped bowed vessels, such as of tri-
16 hull, single V hull and V-bow rigid hulled inflatable boats, for example, such as that shown in
17 FIG. 2. As can be seen, goalposts 18 closely conform to gunwales 29 of vessel 28 in this figure.

18 Further shown in FIG. 2 is a latch 30 attached to V-shaped bow 32 of vessel 28.
19 Referring to both FIGS. 1 and 2, as vessel 28 moves onto trailer platform 12, harness 20 slides
20 down V-shaped bow 32 into latch 30. The elasticity of the harness absorbs the moving or kinetic
21 energy of vessel 28 while the latch retains the harness and assists in securing the vessel on

platform 12.

In FIG. 3, a close-up view of latch 30 is shown. In this figure, latch 30 is shown with a cam 34 in a closed position. Cam 34 resides in a recess 36 defined in the body of latch 30. A lanyard 38, as strung from a winch of trailer platform 12, may be used to further secure vessel 28 once the vessel is docked on the platform. Harness 20 allows the operator of the vessel to maintain power while lanyard 38 or other lashings are made, thereby facilitating a safe and secure docking of the vessel.

In FIGS. 4A and 4B, there are shown respective views of latch 30 in open and closed positions. In FIG. 4A, cam 34 has been moved to the open position by harness 20 passing down V-shaped bow 32 into hook 40 defined in the latch. To achieve this position, cam 34 rotates about pivot 42 as harness 20 interfaces with the cam. Such rotation of cam 34 causes spring bias 44 to elongate. FIGURES 4A and B show an approximate water level 46 as it relates to latch 30.

In FIG. 4B, a closed position of latch 30 and its cam 34 are illustrated. As can be seen in this figure, cam 34 is biased to the closed position by spring bias 44 taking a retracted position. Cam 34 also has a weighted lobe 46 that further assists in biasing cam 34 to the closed position.

In the case of a 25 foot rigid hulled inflatable boat weighing approximately 10,000 pounds, a 1.5 inch diameter nylon harness sufficiently decelerated the vessel from a closing speed of 4.5 knots. The 2.5g deceleration was accomplished in approximately one foot of horizontal displacement.

Obviously, many modifications and variations are possible in light of the above description. It is therefore to be understood that within the scope of the claims the invention may

Navy Case No. 79950

1 be practiced otherwise than as has been specifically described.